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7 BEFORE THE STATE OF WASHINGTON
8 ENERGY FACILITY SITE EVALUATION COUNCIL

9 In the Matter of Application No. 99-1:

Exhibit _____ (JGL-T)

10
11 SUMAS ENERGY 2 GENERATION
12 FACILITY

PRE-FILED TESTIMONY OF JERRY
LILLY

13
14 **Q: Please state your name and business address.**

15 A: Jerry G. Lilly
16 JGL Acoustics, Inc.
17 5266 NW Village Park Drive
Issaquah, WA 98027

18 **Q: What subjects do you intend to address in your testimony?**

19 A: I will address issues relating only to environmental noise emissions from the proposed facility.

20 **Q: Could you describe your background and experience?**

21 A: I hold a Master=s Degree in Engineering Acoustics from Penn State University
22 (1975) and a Professional Engineering license in Acoustical Engineering from the State of Oregon
23 member of the Institute of Noise Control Engineers, and I am active in ASHRAE (American Society of
24 Mechanical Engineers), ASA (Acoustical Society of America), and NCAC (National Council of
25 Acoustical Consultants). I have completed a two-year term as President of the National Council of Acoustical Consultants (1999-2001). I am a
consulting firm, JGL Acoustics, Inc. in the Seattle metropolitan area. I started my firm in 1983,

architectural acoustics, industrial and mechanical noise control, and environmental noise assessment and con

In addition to my 25 years of acoustical consulting experience, I taught two courses in Acoustics at the University of Maryland (1983 & 1988). I have also published several technical papers in acoustical journals and periodicals, and I am one of the professional development seminar speakers. A copy of my resume is submitted as Exhibit ____ (JGL-1).

Q: In preparation for this hearing, what documents did you review?

A: I have reviewed the following materials for this testimony:

Pages 3.3-1 through 3.3-12 of the Sumas Energy 2 Final EIS (Volume 1)

Pages 4.1-1 through 4.1-15 of the Sumas 2 Generation Facility EFSEC Application 99-1 (revised January 10, 2000)

Pages 4.1-1 through 4.1-15 of the Sumas 2 Generation Facility EFSEC Application 99-1 (revised June 29, 2001)

Pages 3.4-1 through 3.4-8 of the Sumas Energy 2 Draft SEIS (undated)

Applicant=s Prefiled Direct Testimony of Frank Brittain, Ph.D. (undated)

September 11, 2001 letter from David Bricklin to Karen McGaffey

Response to Low Frequency Noise Data Request (pages 4 through 8, dated 9/20/01)

Q: In Council Order No. 754 (at 41), the Council found that the computer modeling conducted by the Applicant is insufficient to assess the probable noise level that would be emitted from the proposed plant, whether that noise level would comply with relevant legal standards, and what effect it might have on the health and comfort of the local population. Does the Second Revised Application include any new computer modeling to address any of those shortcomings identified by the Council?

A: No. The only changes reflected in the Second Revised Application pertaining to noise relate to a post-construction monitoring program. There is no new computer modeling presented.

Q: Is there some other method of analyzing noise impacts (other than computer modeling) that was used by the Applicant in the Second Revised Application to respond to the Council=s finding that the prior noise analysis was deficient?

A: No. There was no additional analysis of any kind provided by the Second Revised Application. The Second Revised Application does include a tabular listing of the octave band sound power levels (Table 4.1-5) for the most significant noise sources associated with the project. This list includes the 31.5 Hz and 63 Hz octave bands, which would constitute the majority of the low frequency noise. However, these data

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1 represent estimated source strengths, not the sound levels expected at the receiver
2 locations. Presumably, these data were input into the computer modeling effort that
3 was used to generate Table 4.1-6. It should be a relatively simple task to create a new
4 table that presents the calculated octave band low frequency sound pressure levels at
the various receiver locations. However, this information has not been provided by the
Applicant.

5 I would like to point out that in my review of the above-mentioned documents, there
6 has been very little discussion about tones. I am fearful that too much emphasis is
7 being placed on low frequency noise and people are forgetting about tones. There are
8 certain pieces of equipment that are known to create significant audible tones. This
9 equipment includes (but is not limited to): high-speed axial fans, radial blade and
10 radial-tip blade centrifugal fans, and transformers. Usually the frequencies of the tones
11 are known early in the design phase of the project. The acoustic modeling effort
12 should account for these tones by tagging the octave bands that contain tones for each
13 noise source that has been identified as containing significant tones. Then, when
14 evaluating the receive sound level at each receiver, check to see if the predicted total
15 octave band sound level is at least 10 dB above the octave band level of the tonal
source(s). If the predicted tone level is close to the predicted total sound level in that
octave band, additional attenuation is required for the tonal source. Note that
additional attenuation may be required even if the total A-weighted sound level is
within the noise ordinance requirements. Taking these additional steps does not
necessarily require a repeat of the entire modeling effort. It merely involves taking the
time to identify which sources contribute tonal energy at each of the various receiver
locations.

16 **Q: Are the deficiencies in the computer modeling analysis identified by the Council**
17 **in Order No. 754 relevant to British Columbia residents?**

18 A: Yes. As I testified during the last hearings, the project may well emit tones and low
19 frequency noise that could impact people in British Columbia. The Second Revised
20 Application continues to omit any evaluation of these important issues.

21 For instance, the noise monitoring program now proposed by the Applicant is to
22 extend to a distance of 3.5 miles. That=s considerably greater than the distance from
23 the plant to the Canadian border. Obviously the Applicant recognizes that there is a
possibility for noise impacts intruding into British Columbia yet impacts in British
Columbia are not analyzed in the application.

24 **Q: The Second Revised Application does include a new proposal for monitoring**
25 **noise after operation commences (Ex. 181.3 at 4.1-15). Does that monitoring**

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program address your concerns?

A: Some, but not all. The noise monitoring program in the Second Revised Application is defective because it apparently excludes British Columbia. The Second Revised Application states that the monitoring plan will include a minimum of 12 locations up to a distance of 3.5 miles from the plant. But there is no guarantee that any of those 12 locations will be in British Columbia (even though, as I mentioned earlier, a 3.5-mile circle around the plant would include a substantial amount of property in British Columbia). The applicant's prior modeling of noise impacts excluded consideration of impacts in British Columbia. Without an express statement that the monitoring program *will* include locations in British Columbia, we cannot assume that that will be the case.

In fact, it appears that the applicant has no intention of including British Columbia in the noise monitoring program. The Second Revised Application states that SE2 will select measurement locations in concert with the City of Sumas or Whatcom County staff. Presumably if the applicant intended to include British Columbia sites in the monitoring program, there would be a reference here to including the Province in this effort. Similarly, the Second Revised Application states that if "the City [of Sumas] and [Whatcom] County noise regulation staff jointly agree" that low frequency sounds or tones are reasonably objectionable, then SE2 will respond. Ex. 181.3 at 4.1-15. Again, the omission of acoustical engineers from British Columbia suggests that the Applicant has no intention of including British Columbia in this noise monitoring program.

Q: In addition to the apparent exclusion of British Columbia, what other deficiencies do you see in the proposed noise monitoring program?

A: Another concern that I have relates to the time frame of the noise monitoring and the implementation of noise mitigation. In fact, the proposal requires that the initial monitoring report not be submitted to EFSEC until after the facility has been in operation for an entire year. If there are significant noise impacts (on either side of the border), that is a long time for those impacts to be endured by the neighbors. Plus, the one year mark is only when the initial report is filed with EFSEC. There is no commitment in the application to any time frame beyond that within which curative measures will be in place.

I recommend that the initial noise monitoring report be filed within 60 days of the commencement of plant operation. The report should present both pre-construction and post-startup ambient noise levels and spectra at each measurement location. If the measurements show that noise levels do not comply with the noise ordinance(s) or if excessive low frequency noise or tones

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1 are discovered, the report should also specify a specific mitigation plan and a
2 time within which curative measures will be in place. That time frame is a little
3 harder to specify because the amount of time reasonably necessary may well
4 vary depending on what type of mitigation measure is required. Nonetheless, a time
5 frame presumed to be reasonable could be established leaving the Applicant the option
6 of requesting additional time if it could make the case that more time was reasonably
7 necessary. For most curative measures that I could envision, 90 days ought to be a
8 sufficient amount of time to make the necessary changes.

9 **Q: What other concerns do you have about the noise monitoring and post-operation
10 noise mitigation proposal?**

11 A: The proposal does not indicate specifically how the applicant plans to monitor the low
12 frequency noise and tones radiating from the plant. I was expecting to see a statement
13 that the applicant will measure (in addition to the A-weighted Leq and L_N statistics as a
14 function of time of day) the background noise spectrum in 1/3-octave bands from 20
15 Hz to 10,000 Hz at each measurement location. The background noise spectrum
16 should be measured over a minimum time period of 60 seconds over an interval of
17 time when there are no audible transient noise sources (e.g. aircraft, local street traffic,
18 etc.). Ideally, the background noise spectrum data should be collected between the
19 hours of 12:00 am and 5:00 am to minimize the potential of contaminating data from
20 transient sources. I would also like to point out that an assessment of tones is
21 impossible if the measurements are conducted in octave bands.

22 I would also like to reiterate that the best time to address noise problems is during the
23 design and permitting phase. If noise problems emerge after the plant is built, it is
24 generally much more difficult and more expensive to resolve. Inevitably, what
25 constitutes a reasonable noise mitigation measure after the fact is judged, in part, by
26 how expensive and difficult it is to implement. The best way to incorporate noise
27 mitigation is at the front end before the facility is built.

28 **Q: The Applicant's noise witness, Frank Brittain, suggests that if proper attention is
29 paid to noise issues during the detailed design phase, no low frequency noise or
30 tone problems should occur. Ex. 191 at 5-8. In particular, Dr. Brittain states:
31 "From personal discussions with Dave Eaden of SE2, I understand and have been
32 assured that SE2 is serious about meeting the noise requirements. This includes
33 making sure that noise is adequately addressed during the detailed design phase,
34 and the noise controls needed will be installed." Ex. 191 at 7:31-37. Are the
35 assurances that Frank Brittain references incorporated in the Second Revised
36 Application?**

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1 A: No. Frank Brittain identifies a number of details that ought to be included in the
2 detailed design of this facility to minimize the risk of low frequency and tone noise
3 problems. None of his specific recommendations are included in the Second Revised
4 Application. I would think that if EFSEC wants assurance that Dr. Brittain=s
5 recommendations are going to be addressed by the Applicant during the detailed
6 design phase and during construction, that they should be set forth in the application
7 and included in the Site Certification Agreement (if one is issued).

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